

REMARKS

Claims 1 and 99 have been amended. Claims 1-31 and 99 remain pending. Applicants reserve the right to pursue the original claims and other claims in this and other applications. Applicants respectfully request reconsideration of the above-referenced application in light of the amendments and following remarks.

Claims 1-5, 7, 10-18, 23-31, and 99 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No.: 6,475,854 ("Narwankar I"). The rejection is respectfully traversed.

The cited reference fails to teach the subject matter of amended independent claims 1 and 99. Specifically, Narwankar I does *not* disclose a capacitor comprising, *inter alia*, "a top electrode consisting of a single oxidized gas annealed top conducting layer formed over said dielectric layer," as recited in claim 1, or a capacitor comprising, *inter alia*, "an upper electrode comprising a bottom and top conducting layer formed over said dielectric layer, wherein the top conducting layer is an oxidized gas annealed layer," as recited in claim 99.

The Office Action asserts that Narwankar I discloses a memory device with a bottom conducting layer 605, a dielectric layer 606, and a top conducting layer 608 which is annealed to become an oxidized gas annealed top layer 610. However, Narwankar I *also* discloses that a "*second* upper metal layer 612 is then deposited *onto* the upper oxygen containing layer 610." (Col. 11, lines 16-17) (emphasis added). The *combination* of "[t]he upper oxygen-containing layer 610 *and* the second upper metal layer 612 *together* form the *upper electrode* 615 for the capacitor structure 650." (Col. 11, lines 33-36) (emphasis added).

Narwankar I's upper electrode 615 comprises at least *two* layers: layers 610 and 612. The top layer 612 of upper electrode 615 is *not* an oxidized gas annealed layer. Narwankar I's layer 610 is formed *underneath* top layer 612. Narwankar I's layer 610 is the *only* layer described as being an oxygen-containing layer. Layer 612, a non-annealed layer, is formed on *top* of annealed layer 610 and is *not* an oxidized gas annealed layer. Both layers 610 and 612 form upper electrode 615.

Applicants' specification provides that "during subsequent wafer fabrication, the dielectric layer develops oxygen vacancies which contribute to capacitor current leakage." (Pg. 3, lines 20-22). Applicants' claimed capacitor "improves the dielectric property of the dielectric layer 36 by adding an oxidizing gas anneal (second anneal) which fills the oxygen voids created in the dielectric layer 36 *after* the top conducting layer 38 is deposited." (Applicants' specification, pg. 8, lines 8-10) (emphasis added). "The oxygen ions pass through the oxygen permeable top conducting layer and are diffused into the dielectric layer and fill oxygen vacancies created in the dielectric layer during the deposition and patterning of the top conducting layer." (Applicants' specification, pg. 5, ll. 1-3).

Narwankar I, in contrast, merely discloses that the second metal layer 612 is deposited *after* the first metal layer 608 is annealed (which becomes layer 610). Narwankar I does *not* teach that the second metal layer 612 is *itself* annealed. Oxygen vacancies would *still* be present in Narwankar I's dielectric layer. "[D]uring subsequent wafer fabrication, the dielectric layer develops oxygen vacancies which contribute to capacitor current leakage." (Applicants' specification, pg. 3, ll. 20-22). Thus, Narwankar I merely discloses a *conventionally* formed top electrode comprising two separate layers: 610 and 612, wherein *both* layers form upper electrode 615.

Accordingly, Narwankar I fails to disclose a capacitor with “*a top electrode consisting of a single oxidized gas annealed top conducting layer formed over said dielectric layer,*” as recited in claim 1 (emphasis added), or a capacitor with “*an upper electrode comprising a bottom and top conducting layer formed over said dielectric layer, wherein the top conducting layer is an oxidized gas annealed layer,*” as recited in claim 99 (emphasis added).

Claims 2-5, 7, 10-18, and 23-31 depend from claim 1 and should be similarly allowable along with claim 1 for at least the reasons provided above, and on their own merits.

Claims 1, 6, and 8-14 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No.: 6,204,203 (“Narwankar II”). The rejection is respectfully traversed.

For similar reasons provided above, Narwankar II does *not* disclose a capacitor comprising, *inter alia*, “*a top electrode consisting of a single oxidized gas annealed top conducting layer formed over said dielectric layer,*” as recited in claim 1. Narwankar II merely teaches a *conventionally* formed top electrode 615 with a top conducting that is not annealed.

For example, in Narwankar II’s FIG. 2e, an annealed silicon nitride layer 209 is formed on bottom electrode 206; a polycrystalline metal oxide dielectric 210 is formed on layer 209, and a top capacitor electrode 212 is formed on dielectric layer 210. Narwankar II’s top capacitor electrode 212 is formed by any well-known technology (Col. 9, lines 13-18). Narwankar II’s top electrode 212 does not have a top electrode consisting of a single oxidized gas annealed top conducting layer.

Claims 6 and 8-14 depend from claim 1 and should be similarly allowable for at least the reasons provided above with regards to claim 1, and on their own merits.

Claims 1-5, 7, 9-18, 23-31, and 99 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No.: 6,833,605 ("Li"). The rejection is respectfully traversed.

Applicants respectfully submit that Li is not a proper prior art reference under either 35 U.S.C. §§ 102 or 103. The prior art rejection of claims 1-5, 7, 9-18, 23-31, and 99 is predicated on the Li reference. Li issued as a patent on December 21, 2004. Li was first published on March 18, 2004 as U.S. 2004/0051132 A1. Li's date of filing is August 19, 2003. Li is a divisional and claims the benefit of U.S. patent application no: 10/137,424, filed on May 3, 2002. Thus, the earliest effective date of the Li reference is May 3, 2002. The present application, however, was filed *prior* to May 3, 2002 on June 6, 2000. Consequently, Li is not prior art against claims 1-5, 7, 9-18, 23-31, and 99.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to review and pass this application to issue.

Dated: July 25, 2005

Respectfully submitted,

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